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# Investigating Factors Influencing Adoption of Land Record Management Information System (LRMIS): A Case of Pakistan

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**Abstract**

Objective of this article is to investigate the factors affecting adoption of Land Record Management Information System (LRMIS) in Pakistan context. Under financial assistance of World Bank, this Pakistan e-government initiative is based on government's long term digital strategic policy that aims to reform and modernize Land Record administration and resources. The model formulated here is based on Unified Theory of Acceptance and Use of Technology (UTAUT) and incorporates constructs such as performance expectancy, effort expectancy, and social influence, facilitating conditions, self-efficacy, trust and behavioral intention. The verifiable results exhibited the positive and significant relations for all 14 hypotheses affirmed using seven constructs. The empirical demonstrations and arguments mentioned in this article can assist Pakistan government to enhance upon and to fully avail the potentiality of LRMIS as an effective and serviceable substance for lucid, not bribable governance and towards modernized digital Land Records not only for one province but throughout the country.

**Keywords:** E-Government, LRMIS, Adoption, UTAUT, Citizens, Pakistan

## Introduction

E-Government is the effective use of Internet technologies during the activity of the government services (Cohen and Eimicke, 2002; Jorgensen and Cable, 2002). The ubiquitous boom and acceptance of the Internet (worldwide web) has structured several intimations for the public sector.

Governmental Organizations with modern digital systems are more interactive in nature, non-hierarchical, non-linear, and never closed, instead of using the old fashioned method to cope with Citizen's related data & information (Schaupp et al., 2010; West, 2008). The current expansion of e-government services has created new chances to deliver information and services more appropriately and cost effectively to the citizens (Wang and Shih, 2009). E-Government is an vital component in the conversion of any government, to achieve increasing transparency, responsibility and satisfactory governance; driving the government towards more citizen-centric approach, goal oriented and effective usage, enabling citizens and businesses to obtain government services and information as skillfully and as productively as possible through the use of web and other mediums of communication (Aggelidid and Chatzoglou, 2008; Lin et al., 2011). The intend of e-government rise and implementation is to substantiate people's information learning, minimizing the digital divide, and justify that these kind of systems can be extensively exercised (Wang and Shih, 2009).

Reforming land records and the usefulness of land markets in Pakistan is a top priority interest for Pakistan Government considering to the wider circle of E-Government at both the central and local levels. In case of Punjab has a total area consists of 205,345 square kilometers, as being most populated province of Pakistan with 80.7 million inhabitants (55.9% of Pakistan's total population).Land Record Computerization as always a vital technical factor of the strategy for E-government, while focusing requirements to be evenly delivering on improved digital service delivery to the citizen. Land Record Information Systems (LRMIS) supervised and supported under World Bank, Some of the details provided by World Bank website can be seen in the following table (The World Bank).

Table 1: Project Development Objective indicators

**Project Development Objective Indicators**

▸ Improved land records services (Text, Custom)

| | Baseline | Actual (Previous) | Actual (Current) | End Target |
|---|---|---|---|---|
| Value | Service centers do not exist. Widespread dissatisfaction with servicesprovided by patwaris. | Customer satisfaction continues to run above 95% | Customer satisfaction continues to run above 95% | Client satisfaction with land record services provided at the local service centers at 95% |
| Date | 14-Feb-2007 | 31-Jan-2014 | 06-Feb-2015 | 31-Dec-2015 |

**Literature Review**

UTAUT as a base model for examining the factors influencing the adoption of e-government systems used by these researchers (e.g., Wang and Shih,2009; Hung et al., 2007; Loo et al., 2009; Schaupp et al 2010; Yeow and Loo, 2009; Carter and Schaupp, 2009; Carter et al., 2011; Chan et al.,2010;) Hung et al. (2007) pointed out that all the main constructs of this model were discovered to be the notable predictors of user's intention to adopt and use information kiosk system. Carter and Schaupp (2009) divulged that social influence, performance expectancy, trust were the significant predictors of the E-File adoption. In the Malaysian government multipurpose smart card (called MyKad), Loo et al. (2009) inspected the levels of user acceptance of the national identity card (NIC) and driving license (DL) systems. UTAUT model was adopted to investigate that Citizens of Malaysia did not have high intentions to use MyKad's NIC and DL systems. "Touch 'n' Go" software which is built–in part of Malaysian multipurpose smart identity was also researched through UTAUT model by Yeow and Loo (2009).The results recommended that Malaysians did not show strong intentions to use the two systems due to the insufficiency to realize of the advantages and the determined attempt needed to use the systems. Through UTAUT, Wang and Shih (2009) inspected the factors of intention to use and use behavior of information kiosks. 244 Taiwan Citizen provided relevant data that was validated against the UTAUT based research model and the outcomes were in total favor of all the constructs toward intention to use and usage behavior of the information kiosk. Spotting different external factors (i.e., self-efficacy, trust, compatibility, avoidance of personal interaction, convenience, flexibility, assistance, and awareness) as the noteworthy precursors of the basic constructs of UTAUT i.e., effort expectancy, performance expectancy, facilitating conditions, and social influence, which eventually affected citizen satisfaction, Chan et al. (2010) produced a specimen model to investigate the adoption of a smart card for citizen identification and access to e-government services. Schaupp et al. (2010) integrated the UTAUT model with the other factors including perceived risk, online trust and optimism bias to explore the e-file adoption of the US taxpayers, the findings showed that all the factors including performance expectancy, social influence, facilitating conditions, and optimism bias had a crucial impact on e-file adoption intention. Carter et al. (2011) examined the impact of factors liable for taxpayer's intention to adopt the e-file system. The findings showed that the factors taken from the UTAUT such as performance expectancy, effort expectancy, and social influence played an important role in predicting taxpayer's e-filing intentions. Else Web-based self-efficacy and perceived security control also had a positive impact on the taxpayer's intention to use e-file system.

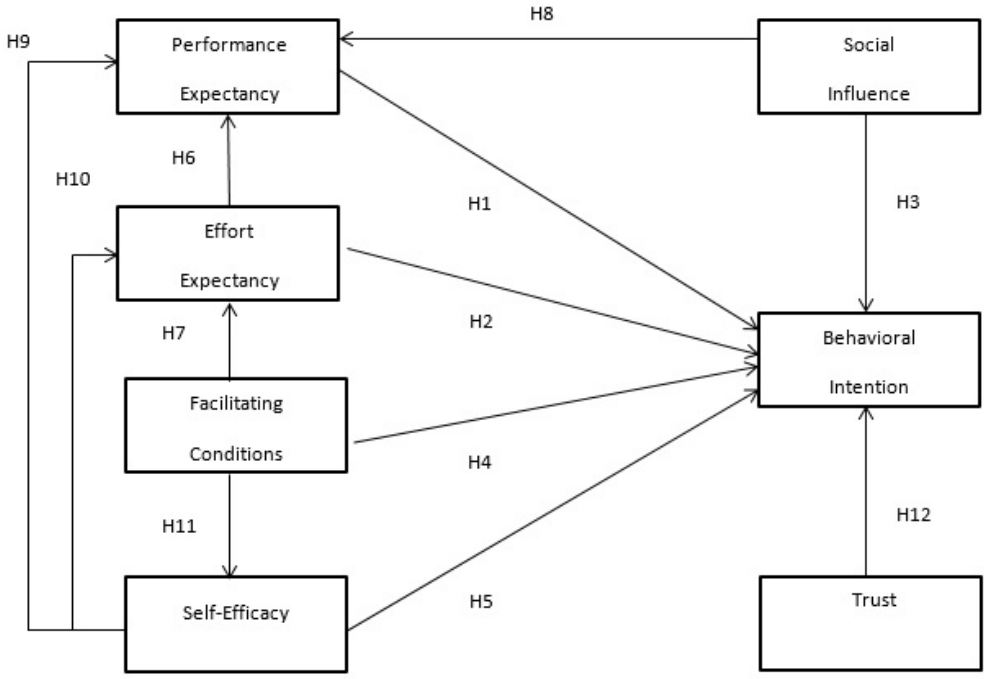
## Research Model Development and Hypotheses

### Theoretical Background – UTAUT

A lot of theoretical models have been developed and crafted to study technology acceptance in the information technology literature (Lean et al., 2009). The model to be developed and tested in this article is primarily based on the UTAUT (Venkatesh et al., 2003). This model was chosen because it integrates elements across the 8 theories/models. That 8 theories/models include the Model of PC Utilization (Thompson et al., 1991; Triandis, 1977),Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975), the Technology Acceptance Model (TAM) (Davis, 1989), the Theory of Planned Behaviour (TPB) (Ajzen,1991), the Motivational model (Davis et al., 1992) the combined TAM and TPB (C-TAM-TPB) (Taylor and Todd, 1995), the Social Cognitive Theory (Bandura, 1986; Compeau and Higgins, 1995) and the Innovation Diffusion Theory (IDT) (Moore and Benbasat, 1991; Rogers 2003). While juxtaposing to the other models, the UTAUT was able to describe 70% of technology acceptance behaviour, a substantial improvement over previous similar kind of models, which used to explain only about 40% of acceptance (Venkatesh et al., 2003). As an outcome, due to its unified nature, the UTAUT is assessed as an enhanced model with vigorous features and stingy set of constructs that could better describe the factors influencing individual's intention and usage (Lean et al., 2009). Four basic determinants of intention and usage are namely social influence, effort expectancy, performance expectancy and facilitating conditions. The variables age, gender, experience, and voluntariness are used as moderators (Venkatesh et al., 2003).

### Overview of Research Model

Based on the UTAUT model, Our Current study has framed a research model along with one additional variable: Self-Efficacy. Without the including of any moderating variables as framed in UTAUT, the proposed model incorporate only performance expectancy, effort expectancy, social influence, facilitating conditions, and behavioral intention. The use behavior has not been included as related data were gathered from the potential adopters of the LRMIS system. Potential adopters are hoped-for to use LRMIS system in the near future hence were rather described its operations and implicit benefits So, assessing their use behavior is unquestionable in this research. We inspect the impact of facilitating conditions onto the intention to use the LRMIS system by keeping in mind its importance in some previous e-government related researches (e.g., Sambasivan et al.,2010; Schaupp et al., 2010; Yeow and Loo, 2009).




Moderators: Gender (H13) and Age (H14)
Fig. 1: Proposed Research Model

Integrating Self-Efficacy and Trust as an additional constructs in our model which is defined as "The self-efficacy is the judgment of one's ability to use a technology to achieve a particular job or task." Self-Efficacy is viewed as quite applicable in our research as we conceive that individual's technological efficiency increase his or her intention to use the system provided it is easy to use and useful. Research as (e.g., Chiu and Wang, 2008; Schaper and Pervan, 2007; Susan et al., 2010) on IS topic have discovered the relationship between self-efficacy and effort expectancy as very substantial too. Kim et al. (2010) discovered that perceived trust will affect user behavior relating to the use of e-payment systems. Hence, we explore its effect directly likewise through performance expectancy and effort expectancy onto the behavioral intention to use LRMIS. The Impact of Self-Efficacy on behavioral intention has been investigated and discovered vital in many studies of IS (e.g., Chiu and Wang, 2008; Abu-Shanab, 2011 Giannakos and Vlamos, 2013) and e-government (e.g., Sahu and Gupta, 2007; Carter and Schaupp, 2008; Carter et al., 2011; research. Therefore, this suggested model comprise of six constructs including five constructs (i.e., effort expectancy; performance expectancy, social influence, facilitating conditions, and behavioral intention) from the UTAUT and self-efficacy derived from the SCT. The proposed model and the related hypotheses are shown in Figure 1.

Table 2: Definition of Construct

| Variable/Construct | Definition |
|---|---|
| Performance Expectancy | Performance expectancy is defined as the degree to which an individual believes that using the system will help him or her to attain gains in job performance (Venkatesh et al., 2003). |
| Effort Expectancy | Effort expectancy is defined as the degree of ease associated with the use of the system (Venkatesh et al., 2003) |
| Social Influence | Social influence is defined as the degree to which an individual perceives that important others believe that he or she should use the new system (Venkatesh et al., 2003). |
| Facilitating Conditions | Facilitating conditions are defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system (Venkatesh et al., 2003). |
| Self-Efficacy | Self-efficacy is the judgment of one's ability to use a technology (e.g., computer) to accomplish a particular job or task (Bandura, 1986) |
| Trust | "The degree to which people trusts government LRMIS policy and service." Pavlou and Gefen (2004) |

## Hypotheses Development

We have developed 14 hypotheses based on the relationships between six constructs adopted in our suggested research model. A concise synopsis of the definitions for the core constructs used in the model is presented in Table 1.

## Performance Expectancy

Performance expectancy is defined as "the degree to which an individual believes that using the system will help him or her to attain gains in job performance". The five variables including perceived usefulness (TAM/TAM2 and C-TAM-TPB), extrinsic motivation (MM), job-fit (MPCU), relative advantage (IDT), and outcome expectations (SCT) are similar in nature to performance expectancy. These constructs have been considered as suchlike to the others in some previous literature (Venkatesh et al., 2003).Venkatesh et al. (2003) discovered that performance expectancy is the stiff predictor of behavioral intention among the other constructs and came across it impact at all level of evaluating including the voluntary and mandatory settings. This variable has acted substantially on behavioral intention across a number of studies (Hung et al., 2007, Carter et al., 2011; Hung et al., 2007; van Dijk et al., 2008; Wang and Shih,2009; Yeow and Loo, 2009) of the e-government adoption too. In LRMIS context, performance expectancy revolve about the insight of that using the LRMIS will be effectual and would assist users to get away with the difficulties of registering and using of LRMIS. Therefore, we hypothesize:

**H1:** Performance expectation will positively affect users' intentions to use LRMIS services.

**Effort Expectancy**

Effort expectancy is described as the degree of ease associated with the use of the system (Venkatesh et al., 2003). 3 variables including complexity (MPCU), perceived ease of use(TAM/TAM2), and ease of use (IDT) capsulized the nature of effort expectancy (Venkatesh et al., 2003).Venkatesh et al. (2003) recognized that effort expectancy was the stiff predictor of the behavioral intentions. Antecedent investigations, on IS/IT adoption (e.g., Luo et al., 2010; Giannakos and Vlamos, 2013; Wu et al., 2012) as normally and e-government adoption (e.g., Yeow and Loo, 2009; Carter et al., 2011; van Dijk et al., 2008) as specifically have also dowered this affiliations. Studies (e.g., Zhou et al., 2010; Gao and Deng, 2012; Nov and Ye, 2009) have also ingrained a noteworthy relationship between effort and performance expectancy. In LRMIS context, effort expectancy focus on the perception that using the LRMIS will be easy to use and this facet will enhance its usefulness as well. Hence, it is anticipated that the impact of effort expectancy will sustain positively and considerably on behavioral intention and performance expectancy. Therefore, we hypothesize:

**H2:** Effort expectation will positively affect users' intentions to use LRMIS services.

**H6:** Effort expectancy will positively affect performance expectancy of the LRMIS services.

**Social Influence**

Social influence is described as "the degree to which an individual perceives that important others believe that he or she should use the new system". 3 constructs from earlier theories have been found to measure social influence, as social factors from the MPCU, subjective norm from the TRA, the TAM2, the TPB, and the C-TAM-TPB, and image from the IDT (Venkatesh et al., 2003).In LRMIS context, social influence can be describe as the perception where individual would use the LRMIS following with his or her friends, family, or any related attached ones who completely believe that using the system is beneficial. Prior studies (e.g., Sahu and Gupta, 2007; Abu-Shanab, 2011; Carter et al., 2011; Yeow and Loo, 2009) have noticed and described the positive and significant relationships between social influence and behavioral intention. Likewise, we strongly consider that users of the LRMIS would perceive it as useful if it is advert to them by their important others. The affiliations of social influence on performance expectancy has been supported by many studies (e.g., Lee and Lin, 2008;

Gao and Deng, 2012; Mayer et al., 2011) of IS research as well. Hence from this description, we hypothesize:

**H3:** Social influence will positively affect users' intentions to use LRMIS services.

**H8:** Social influence will positively affect performance expectancy of the LRMIS services.

**Facilitating Conditions**

Facilitating conditions are described "as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system". This variable stand for the concepts from the other variables including facilitating conditions (MPCU), perceived behavioral control (TPB, DTPB, and C-TAM-TPB), and compatibility (IDT) (Venkatesh et al., 2003).Venkatesh et al. (2003) investigated that there was no substantial relationship between facilitating conditions and behavioral intention, reasoning that such lack of effect could possibly be an outcome of the effect being Interpreted by effort expectancy. Many studies (e.g., Lee and Lin, 2008; Carter et al., Yeow and Loo, 2009 2012; Loo et al., 2011;) on the IS research have discussed a positive and significant relationship between facilitating conditions and behavioral intention even in the thereness of effort expectancy. In LRMIS context, we strongly think that better organizational and technical infrastructure may motivate users toward their increased intention to use the system. Else, we also suggested that sufficient infrastructural facilities to use the system can also potentiate the users' ability toward using the system with better efficiency and also make the system easy to use. Hence, we hypothesize:

**H4:** Facilitating conditions will positively affect users' intentions to use LRMIS services.

**H7**: Facilitating conditions will positively affect effort expectancy of the LRMIS services.

**H11:** Facilitating conditions will positively affect user's self-efficacy of the LRMIS services.

**Self-Efficacy**

Self-efficacy defined as an individual's perception of his or her ability to use the system on his or her own (Bandura, 1986).Being as an important aspect while dealing with the level to assist a person who has in working with the e-government system (Sahu and Gupta, 2007).Prior studies (Jong and Wang, 2009; Abu-Shanab, 2011; Giannakos and Vlamos, 2012;) and e-government adoption (e.g., Fu et al., 2006;Sahu and Gupta, 2007; Carter et al., 2011;) have also proposed that it is one such cause which can significantly influence user's intention to use the system.IS researches (e.g.,

Schaper and Pervan, 2007; Zhao, 2010) have also recognized self-efficacy to positively and significantly influence effort expectancy. Bandura (1982) reasoned that an individual with high self-efficacy would more likely to Influence the behaviour in the future. In LRMIS context, we also understand firmly that individual's enhanced skills and ability of using the LRMIS will influence his intention to use it. Else, we also suggest that higher self-efficacy of an individual would prove to his better performance and effort expectancy. Therefore, we hypothesize:

**H5:** Self-efficacy will positively affect users' intentions to use LRMIS services.

**H9:** Self-efficacy will positively affect performance expectancy of the LRMIS services.

**H10:** Self-efficacy will positively affect effort expectancy of the LRMIS services.

**Trust**

As far as the relationship between trust and the intention to use LRMIS, Carter and Belanger (2005) pointed out that trust of the Internet and trust of the government will affect users' intention to use e-government services. Now days, Citizens are well-known with the Internet, so trust related to Internet is not a critical factor in this study. Lean et al. (2009) also demonstrated the relationship between trust and the intention to use e-government services. Kim et al. (2010) discovered that perceived trust will affect user behavior relating to the use of e-payment systems. Based on the above discussion, we hypothesize that:

**H12.** Trust will positively affect users' intentions to use LRMIS services.

Previous researches have proven the affect and role of gender differences in the acceptance of Information Technology (Akman, Yazici, Mishra, & Arifoglu,2005; Dwivedi, Papazafeiropoulou, Gharavi, & Khoumbati, 2006;Garbarino & Strahilevitz, 2004; Lian & Yen, 2014; Riedl, Hubert, &Kenning, 2010; Taipale, 2013; Van Slyke, Comunale, & Belanger,2002; Wu, 2003).Hence following hypothesis

**Moderators: Gender and Age**

**H13**. Gender differences will moderate the relations between relevant variables and users' intentions to use LRMIS services.

UTAUT exhibited about age as moderator of the relations between relevant variables and behavioral intention. Lian and Yen (2014) demonstrated the moderating role of age differences in adoption of online shopping. Martins, Oliverira, and Popovic (2014) proved the moderating role

of different age levels in case of adoption of Internet banking. Hence, here following hypothesis is deduced

**H14.** Age level will moderate the relations between relevant variables and users' intentions to use LRMIS.

## Research Methodology

### Participants and data collection

Our research used the both Paper-printed and online questionnaire survey approach with the comfortable sampling method. The Paper based questionnaires was distributed at the Land Record offices and online questionnaire were sited on a citizen-related web community to ask for users to take part. Involvement in the survey was completely voluntarily. Citizen who recognized and familiar with LRMIS were qualified respondents. As the utilization of LRMIS in Pakistan is in the initial stage, some of responders were possible future adopters. To make sure that responders would understand the survey, graphical explanations of LRMIS e were provided at the start of all the questionnaires. After recognizing that Citizens knew completely, responders carried on to subsequent parts of the questionnaire. Partial least squares (PLS) is fit for sample sizes over 80, or when the sample is larger than ten times the number of independent variables (Barclay, Thompson, & Higgins, 1995). Data collection was performed from January to July 2015. 250 valid questionnaires were acquired. Avoiding "nonresponse bias", as suggested by Armstrong and Overton (1977) and Hung et al. (2013), the data was split into 2 groups, to observe if there were differences in degree of education and age. Resulting in no significant differences ($p > 0.05$) between these two groups. Hence, the sample was rightly represented for dissection.

### Measurements

With 6 variables with a total of 24 items were discussed Prior studies helped to modify measurements and adapted to fit the research context of our research. Little quantification used 7-point Likert scales and others used 5-point scales. Dawes (2008) observed that there is no difference between 5-point and 7-point data sets. Revilla, Saris, and Krosnick (2013) also proposed that using a 5-point scale is better than a 7- or 11-point scale. Due to above traces, and to increase the degree of questionnaire tightness, variable were measured using a 5-point Likert scale. The questionnaires were composed of three portions; the first demonstrated the graphical illustrations of the LRMIS. The second section showed the demographic questions. The third part exhibited the major items for measuring the variables.

## Data analysis

### Demographics and descriptive statistics

250 useful subjects involved 138 males (55%) and 112 females (45%), ages between 18 and 30 years old (71%). Many of the subjects had an bachelor degree (61%) (Table 3). Hence, the sample in this research is representative. In Table 4, each variable's descriptive statistics is presented, by gender group.

Table 3: Demographics

| Variable | Count (%) |
|---|---|
| Gender | |
| Male | 138 (55%) |
| Female | 112 (45%) |
| Age (in years) | |
| <18 | 3 (1.5%) |
| 19–30 | 178 (71%) |
| 31–40 | 37 (14.5%) |
| 41 – 50 | 27 (10.5%) |
| Over 50 | 6 (2.5%) |
| Education | |
| Senior high school and under | 20 (8%) |
| Undergraduate | 150 (60%) |
| Graduate and higher | 80 (32%) |

Table 4: Descriptive statistics

| Sample | PE | EE | SI | FC | SE | Trust | BI |
|---|---|---|---|---|---|---|---|
| All | 3.67 (0.92) | 3.73 (0.86) | 3.15 (1.01) | 3.27 (0.92) | 3.26 (0.91) | 2.96 (0.92) | 3.60 (1.10) |
| Male | 3.90 (0.93) | 3.95 (0.85) | 3.43 (1.01) | 3.44 (0.90) | 3.45 (0.91) | 3.07 (1.00) | 3.95 (0.96) |
| Female | 3.49 (0.91) | 3.55 (0.83) | 2.93 (0.96) | 3.11 (0.92) | 3.12 (0.91) | 2.87 (0.85) | 3.32 (1.14) |

### Validity and reliability

The validity and reliability of the measurements availed in this research are satisfactory for next future literary analysis. Acceptable threshold towards Composite Reliability (CR) is >0.7 (Hair, Black, Babin, & Anderson, 2010). Average Variance Extracted (AVE) should be >0.5 (Fornell & Larcker, 1981). Acceptable Cronbach's alpha value is >0.7 (Hair et al., 2010). Based on the above criteria, all indexes in this research are acceptable (see Table 5)

Table 5: Validity and Reliability

| Variables | CR | AVE | Factor loading | $R^2$ | Cronbach's α |
|---|---|---|---|---|---|
| Performance Expectation | 0.95 | 0.81 | 0.85–0.94 | 0.27 | 0.94 |
| Effort Expectation | 0.94 | 0.76 | 0.80–0.92 | 0.18 | 0.93 |
| Social Influence | 0.90 | 0.76 | 0.74–0.93 | 0.23 | 0.85 |
| Facilitating Conditions | 0.87 | 0.64 | 0.71–0.88 | 0.47 | 0.81 |
| Self-Efficacy | 0.86 | 0.63 | 0.70–0.87 | 0.19 | 0.82 |
| Trust | 0.85 | 0.63 | 0.70-0.92 | 0.31 | 0.85 |
| Behavioral Intention | 0.97 | 0.94 | 0.96–0.96 | 0.65 | 0.96 |

In case of Discriminant Validity, the cross loadings would be lower than the loadings of every indicator (Hair et al.,2010). Discriminant validity was discovered by investigating as if the square root of AVE for each construct was higher than the squared correlation between the related construct and all the other such constructs (Chin, 1998).

## Analysis results

SmartPLS (Ringle, Wende, & Will, 2005) was used to assure our research hypotheses. Educational level, not being main variable in this research, was rather considered as the control variable in the related data analysis (Teo, 2001). In Table 8, the analysis results are exhibited. The model interprets 65% of the variance of users' behavioral intention toward adopting LRMIS (see Table 5). Considering the t-values, the noteworthy variables impacting citizens' intentions to use the LRMIS are effort expectation, social influence, and facilitating conditions. The outcomes also show that gender differences moderate the relations between social influence and behavioral intention toward LRMIS.

Table6: Overall analysis

| Hypotheses | Path coefficient (β) | t-value | Support |
|---|---|---|---|
| H1: Performance expectation → Intention | 0.231 | 3.11 | Yes |
| H2: Effort expectation → Intention | 0.214 | 3.10 | Yes |
| H3: Social influence → Intention | 0.211 | 3.22 | Yes |
| H4: Facilitating conditions → Intention | 0.273 | 4.19 | Yes |
| H5: Self –Efficacy → Intention | 0.201 | 2.89 | Yes |
| H6:Effort-expectation→Performance expectation | 0.393 | 2.66 | Yes |
| H7: Facilitating conditions → Effort expectation | 0.453 | 4.11 | Yes |
| H8: Social influence → Performance expectation | 0.211 | 3.16 | Yes |
| H9: Self –Efficacy → Performance expectation | 0.243 | 2.77 | Yes |
| H10: Self –Efficacy → Effort expectation | 0.424 | 2.13 | Yes |
| H11: Facilitating conditions → Self –Efficacy | 0.412 | 4.03 | Yes |
| H12: Trust → Intention | 0.381 | 4.24 | Yes |
| **H13: Gender as moderator** | | | |
| H13a: Gender × Performance expectation | 0.291 | 2.13 | Yes |
| H13b: Gender × Effort expectation | 0.113 | 2.06 | No |
| H13c: Gender × Social influence | 0.102 | 2.13 | No |
| H13d: Gender × Facilitating conditions | 0.285 | 2.19 | Yes |
| H13e: Gender × Trust | 0.267 | 2.17 | Yes |

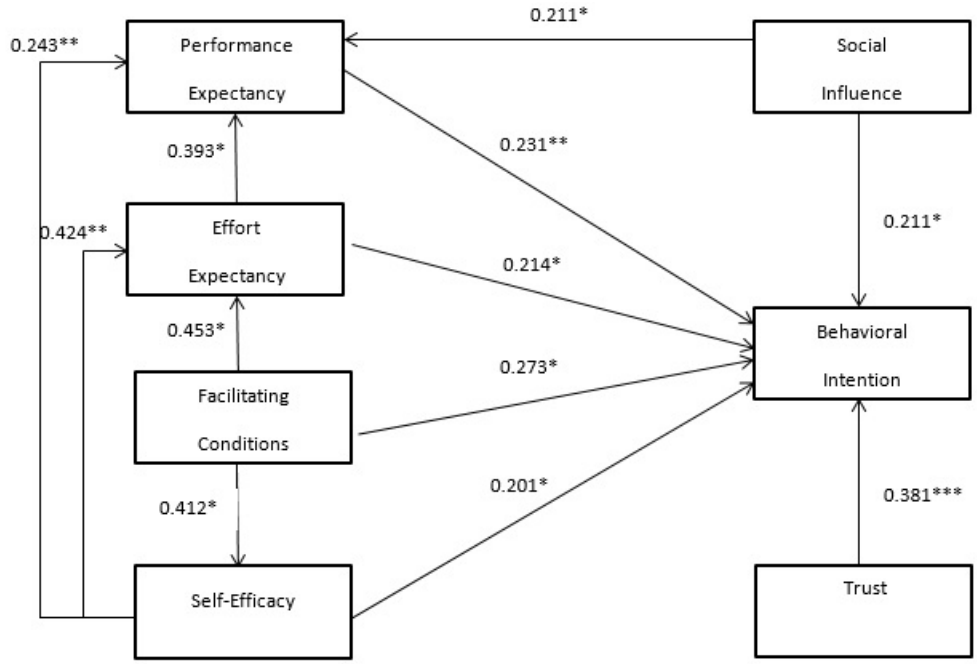
| | | | |
|---|---|---|---|
| **H14: Age as moderator** | | | |
| H14a: Age × Performance expectation | 0.121 | 2.31 | No |
| H14b: Age × Effort expectation | 0.113 | 2.07 | No |
| H14c: Age × Social influence | 0.111 | 2.14 | No |
| H14d: Age × Facilitating conditions | 0.238 | 2.87 | Yes |
| H14e: Age × Trust | 0.253 | 2.65 | Yes |

Table 7: Overall results of the hypothesis testing

| Hypotheses | Results |
|---|---|
| H1: Performance expectation will positively affect users' intentions to use LRMIS services. | Supported |
| H2: Effort expectation will positively affect users' intentions to use LRMIS services. | Supported |
| H3: Social influence will positively affect users' intentions to use LRMIS services. | Supported |
| H4: Facilitating conditions will positively affect users' intentions to use LRMIS services. | Supported |
| H5: Self-efficacy will positively affect users' intentions to use LRMIS services. | Supported |
| H6: Effort expectancy will positively affect performance expectancy of the LRMIS services. | Supported |
| H7: Facilitating conditions will positively affect effort expectancy of the LRMIS services. | Partial |
| H8: Social influence will positively affect performance expectancy of the LRMIS services. | Partial |
| H9: Self-efficacy will positively affect performance expectancy of the LRMIS services. | |
| H10: Self-efficacy will positively affect effort expectancy of the LRMIS services. | |
| H11: Facilitating conditions will positively affect user's self-efficacy of the LRMIS services. | |
| H12: Trust will positively affect users' intentions to use LRMIS services. | |
| H13: Gender differences will moderate the relations between relevant variables and users' intentions to use LRMIS services. | |
| H14: Age level will moderate the relations between relevant variables and users' intentions to use LRMIS | |

## Discussions

This research suggested an integrated model and assisted it using empirical data in the context of land record information systems (LRMIS) in Pakistan. Fig. 2 exhibits the PLS structural analysis results.




* p<0.05; ** p<0.01; *** p<0.001

Figure 2: Validated Research Model to measure Behavioral Intentions to use LRMIS

Effort Expectation, Social Influence, Facilitating Conditions and Trust serve as critical factors for the adoption of LRMIS. However, the factors of Performance Expectation and Self-Efficacy were found to be less critical. This research discovered that Effort Expectation, Social Influence and Facilitating Conditions significantly impact users' behavioral intentions toward LRMIS. Performance expectation and Self-Efficacy are not significant factors. In case of moderating effects of gender differences, our research discovered that gender differences do moderate the relations between social influence and behavioral intention, but have no moderating effect on other antecedents. In our suggestion, As LRMIS is a relatively new e-government Systems in Pakistan, opinions from family members and friends will affect users' decisions regarding their use of LRMIS. But, the degree of social influence on each gender varies. Hence, both social influence and its gender moderating effect are noteworthy. Age level, another moderating variable examined in this research. Moreover, as new information systems in general, LRMIS is a basic part of the Land record preservation and transaction having facilitation centers, so both younger and older users can use it with additional help. Therefore, age level has no moderating effect on the relationship between facilitating conditions and behavior intention. Due to these outcomes, we recommend t that Pakistan government must consider age differences when promoting LRMIS services.

## Conclusion

Land Record Management Information Systems (LRMIS) under e-government research area is the current trend in online information services for common citizens. Previous literature on different kind of e-government systems adoption has concentrated on traditional web based online services with less focus on Land Record Systems. To fill this gap, this current research integrated UTAUT with the some context based features of LRMIS to propose an integrated model to understand the current needs and issues. In Fig. 3 and Table 9, the summarized outcomes are presented. However, many useful, vast digital oriented characteristics and new business models LRMIS, more study of Land Record Information Systems is required. Few studies just discussed the Land Record Systems, there is a huge gap. To fill this gap the current research has integrated UTAUT with 2 more construct as Self–efficacy and trust. The critical factors are performance expectation, effort expectation, social influence, Self-efficacy and trust. Overall, our research conduces to acknowledge critical factors for the adoption of novel LRMIS e-government services, and improves the existing literature for both practitioners and academics.

There are four main limitations in this research. First of all, this study concentrate exclusively on Land Record Information Systems (LRMIS), Future studies can employ this model on different e-government services and examine the similarities and differences to make further efforts. Second, only data from Pakistan was analyzed in this article. We recommend that samples be drawn from different countries in order to observe the effects of culture differences. Third, the antecedents of facilitating conditions regarding LRMIS need further investigation. Finally, respondents to the online survey may cause sample bias, limiting the generalizability of the findings. However, this is a common limitation of online surveys (Teo, 2001).The outcomes of this research have academic and practical implications and make contributions to both the government and academia. The popularity of LRMIS is inspiring an increasing number of governments around the world to serve up as Citizen centric services. They can refer to the outcomes of this research when designing and promoting their services. In case, governments can create different promotional activities for different users. Pakistani government has invested money to advertise LRMIS on mass media platforms like T.V, websites and newspapers. Hence on the whole, the above findings contribute to the research streams related to the employing the UTAUT in different research contexts, and LRMIS services in particular.

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